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ABSTRACT

The effect of an ability-based curriculum on student development was studied at Alverno College, a liberal arts women's college. Data were obtained from 990 participants representing students, alumnae, and working professionals who were not Alverno students. Sixteen research instruments were administered to a sample of 200 students over their 4 years of study; interviews were conducted with 80 students; and intensive study was undertaken with 60 individuals when they were seniors and 2 years later when they were alumnae. In addition, 100 corporate managers and 80 nurses were studied. The following results are discussed: students learn complex abilities, students become self-sustaining learners, students identified curricular elements most important to their learning, students came to value liberal learning, students changed on measures of personal growth, changes included broad generic abilities, student learning styles changed dramatically, students developed moral sophistication, both older and younger students changed their ways of thinking, alumnae and professionals stressed the importance of both intellectual and interpersonal abilities at work, abilities function as an organizing principle for role performance and career satisfaction, and alumnae experienced competence. (SW)

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# ABILITIES THAT LAST A LIFETIME:

## Outcomes of The Alverno Experience

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*by Marcia Mentkowski and Austin Doherty*

Can an ability-based curriculum really make a difference? Can it promote the kind of broad personal and intellectual development that lasts a lifetime? Can it enhance a person's skills, and improve one's chances at having an effective career? Can it benefit the "new" students—adults, women, minorities—as well as traditional students? Do the abilities learned show up on the job?

For the last seven years, we have been working collaboratively with the faculty at Alverno College on a multi-faceted research effort to respond to these questions.

Because our study of college-learned abilities is an ongoing project consisting of interrelated studies, we do not anticipate one set of "final" results. Here, we present fourteen findings in some of our major areas of inquiry.

*Marcia Mentkowski, director of the Office of Research and Evaluation and professor of psychology, initiated and directs Alverno College's research program including longitudinal follow-up studies. With her faculty colleagues, she implements findings for instruction and assessment.*

### The Alverno Curriculum

First, a word about Alverno and our curriculum. We are a liberal arts college for women with a strong focus on preparing these women for professional careers. We presently serve about 1400 degree students who attend Alverno in both weekday and weekend time frames. In 1973, we agreed to focus on certain core abilities as the underlying root of our liberal arts curriculum.

These broad, complex abilities, which are now required of all Alverno students, are as follows:

**Communication**
**Analysis**
**Problem solving**
**Valuing in decision making**
**Social interaction**
**Taking responsibility for the environment**
**Involvement in the contemporary world**
**Aesthetic response**

Our interest in traditional academic and professional subjects was not abandoned; rather, these abilities were added as a second dimension. Once we had this matrix of outcomes in mind, our faculty set about designing ways these abilities could be taught and assessed in every regular course. Faculty in the classroom now involve students in learning situations where simulations and other concrete experiences, as well as reflection and conceptualization, are evaluted. We have also expanded our experiential learning programs. Students in each of our 20 academic and professional programs engage in sponsored, off-campus learning activities where they must apply abilities in concrete situations.

Central to the curriculum is a complex assessment process. The faculty create criteria or descriptive statements that give themselves and the students a picture of each ability to be assessed. Faculty, students, and external assessors from the Milwaukee professional and business communities use these criteria to evaluate student strengths and weaknesses in performance situations. For example, videotapes of student speeches and performance in group leadership situations are routinely evaluated by outside assessors trained to recognize strengths and weaknesses who offer constructive advice for improvement.

Assessment at Alverno thus becomes an opportunity for further learning. Because our assessment focuses on the *application* of abilities, students learn to tie knowledge, theory, motivation, and self-perceptions to constructive action.

*Austin Doherty, vice president for Academic Affairs and Dean of the College, is one of the original designers of Alverno College's ability-based curriculum and assessment process. Since its inception in 1973, she has remained involved in its refinement and evaluation.*

Each student demonstrates her abilities in ways similar to the way the ability is usually expressed—that is, her ability at social interaction would be demonstrated and assessed in a variety of situations.

From the faculty perspective, the key to our impact is the consistency with which our core abilities are fostered throughout the curriculum. Take, for example, analytical ability. All our faculty have redesigned their courses to insure the development of this ability within the context of their particular discipline. By infusing concern for analysis—and the other abilities as well—into their teaching activities, assignments, and assessments, the faculty create an environment with a consistent message about learning. Our approach is not dependent upon any particular technique. Rather, it is the systematic, constantly evaluated use of abilities that characterizes our approach. For the faculty, the curriculum is a collaborative effort which transcends departments and divisional structures.

**The Research Outcomes**

But does it work? To research this question, we obtained data from 990 participants in three different groups: students, alumnae, and working professionals who were not Alverno students.

To examine student outcomes, we took three independent approaches: (a) we studied student performance within the curriculum on college-designed ability measures; (b) we studied student perceptions of reasons for learning, the process of learning, and its value for their own career and life goals (Much & Mentkowski, 1982); and (c) we studied student performance on twelve measures from outside the college which describe human growth patterns (Mentowski & Strait, 1983).

Student data were created by tracking the development of all 750 students in two different classes—those entering in 1976 and 1977—through graduation. Two hundred of these formed a final longitudinal sample. Sixteen research instruments (12 were drawn from outside the College), which generated 17,500 responses, and 400 longitudinal interviews with 80 students, were used to measure ability development by students in the two classes.

To obtain data on how our graduates were using the abilities we taught, we intensively studied 60 individuals, first as seniors, then two years later as alumnae (Mentkowski, Much & Giencke-Holl, 1983). We also wanted to know how these abilities compared to the abilities actually used by other working professionals. To this end, we studied over 100 managers and executives from 53 Milwaukee companies (Mentkowski, O'Brien, McEachern & Fowler, 1982) and 80 nurses from three health care settings (Mentkowski, DeBack, Bishop, Allen & Blanton, 1980).

What did we find?

#1. Students learn complex abilities

Along the way toward graduation, each Alverno student has engaged in more than 100 active performance assessments in her various courses. Faculty design each assessment to elicit a particular level of one of the eight major abilities and use the course's discipline content as a context. Each graduate's performances have been variously assessed by faculty, peers, and community professionals (and always by herself), according to criteria that remain stable across disciplines.

Our findings indicate that students have shown consistent change through this complex network of performance measures. This suggests that the complex outcomes identified by the faculty are indeed developable and *visible in performance* to both faculty, students, and professionals from outside the college; that a complex ability is *recognizable across settings* despite the varied forms it may take in different disciplines and professional environments; and that such abilities can be *developed sequentially* to increasingly complex levels.

#2. Students become self-sustaining learners

We analyzed 400 confidential longitudinal interviews with over 80 students to ask how they make meaning out of their learning. How would they see their learning as relevant to their goals? What elements of the curriculum affect development of abilities and "learning to learn?"

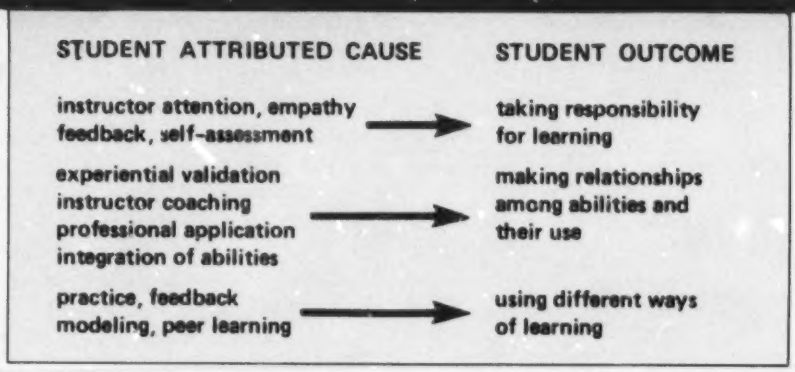
The interview analysis found that learning as described by students is a process of experiencing, reflecting, forming new concepts, and testing one's judgment and abilities in action. Through the analyses, we identified three major components that describe development of "learning to learn:" (1) taking responsibility for learning, (2) making relationships among abilities and their use, and (3) using different ways of learning.

For example, a student described *making relationships among abilities and their use* in the following terms: "Things are pulled together more for you through the abilities . . . a math class and a music class may have nothing to do with each other. But if you think about it, you are doing problem solving in both . . . it's really the same process. You don't experience that unless you can go to your abilities and see that it's interrelated, and you can pull it together more for yourself." Still another said, "You have to take these abilities like valuing in different classes . . . I looked at valuing from the philosophical and psychological standpoints in a death and dying course . . . it has caused me to see things from many different points of view . . . to try to get values out of a biochem experiment, looking for relationships in a lot of things, and looking for universality where there seems to be none, is really hard on your head . . ."

#3. Students identified curricular elements most important to their learning

To what curricular elements do students attribute "learning to learn?" One of the most prominent causes gleaned from the interview examples is *experiential validation:* applying abilities within and across courses, demonstrating them on assessments and during internships, and using abilities in multiple settings. One student said, "You can see you've really been learning in school because you can *use* it out there . . . it's not just something memorized . . . it's something you can actually work with . . . it's the experiences they give you and that have shown me

*(Continued on page 11)*


STUDENT ATTRIBUTED CAUSE
STUDENT OUTCOME
instructor attention, empathy feedback, self-assessment
taking responsibility for learning
experiential validation instructor coaching professional application integration of abilities
making relationships among abilities and their use
practice, feedback modeling, peer learning
using different ways of learning

that I've learned." And another said, "They've challenged me to use all my skills on the spot."

Other causes include two variables more likely to be found at small colleges: instructor attention, empathy, and coaching. But the other student-attributed causes—experiential validation, feedback, self-assessment, practice, professional application, opportunities to integrate abilities, modeling and peer learning—are curricular elements that already are, or could be, used at larger colleges and universities.

### #4. Students came to value liberal learning

Do students oriented toward vocation and career develop liberal learning values? Alverno students develop values for open-mindedness, dealing with multiple points of view, and appreciation for the arts and humanistic traditions. A large share of students come to college today to have a better chance at a job and career, in contrast to values for personal growth or learning for its own sake (Astin, 1983). Alverno students are no exception. A major result from our study of perceptions is that students maintain a consistent pattern across all four years of justifying learning in terms of its relation to their career expectations.

What is significant here is, first, the repeated pattern of change from skepticism to assertions of value for "liberal education" experiences on the part of students who remain primarily career-focused. Second, the pattern includes not simply assertions—which might only be environmentally acceptable noises. Students make relationships between their concepts of learning and their learning experiences and give concrete explanations of how they see these kinds of learning as valuable to their careers and personal life experiences.

Traditional views of college assumed that students enrolled in order to develop liberal learning values which would link to career and professional values when they entered the work force after graduation. Our results indicate that students come to college seeking job and career security. Liberal learning values become attached to these early values. Concerns for economic security develop into career and professional values, a link that is reinforced and enriched by the new liberal learning values.

### #5. Students changed on measures of personal growth

Almost all colleges promise personal growth outcomes and expect that college makes a difference in broad abilities, lifelong learning, and lifespan development. Studies of college outcomes have shown that college as a whole causes change (Astin, 1977; Feldman & Newcomb, 1969; Heath, 1977; Jacob, 1957; Pace, 1979). However, few studies have demonstrated change linked to a particular curriculum. It is becoming more and more critical that the curriculum, rather than the college atmosphere alone, be responsible for change. Educators are hampered in their efforts at curricular reform if they do not know how the curriculum is and is not effective. Also, a larger share of younger students work; they spend less time in extracurricular activities and many live off campus.

Many colleges enroll large numbers of older students. Does the curriculum we offer build on adults' more extensive experiences? Are adult changes merely a function of greater maturity rather than the curriculum? Do younger students develop in a college which also focuses on the growth of older adults? Two questions that guided our research are: (1) Can we attribute change in measures of learning, abilities, and lifespan development to the curriculum? and (2) Does the mature adult need education, or is experience enough?

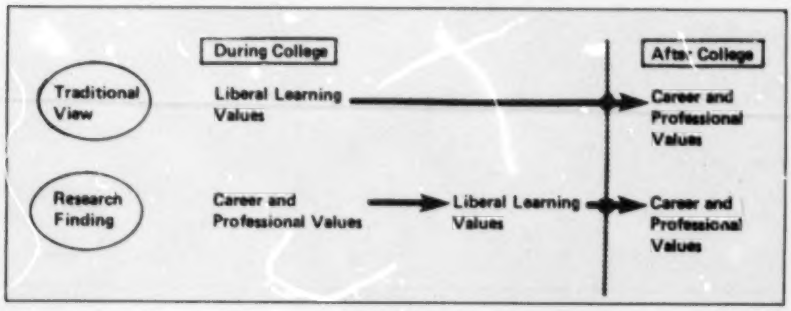
Thus, along with the study of student performance within the curriculum on college-designed ability measures, and the study of student interviews, we also studied student performance on twelve measures drawn from outside the college. These measures describe human growth patterns from three separate theoretical frameworks: cognitive development (Kohlberg, 1981; Loevinger, 1976; Perry, 1970; Piaget, 1972; Rest, 1979), learning styles (Kolb, 1983), and generic abilities (Watson & Glaser, 1964; Winter, McClelland & Stewart, 1981). Because we can relate variations in performance to longitudinal change on these outside measures, we can examine whether performance in the ability-based curriculum contributes to change in personal growth.

Students clearly show longitudinal developmental changes on the twelve measures; generally, change can be attributed to performance in the curriculum. This is the case even when we account for change due to pretest scores, age, religion, parents' education and occupation, high school grade point average, marital status, year of entrance, previous college experience, living at home or on campus, full- or part-time attendance, or type of major.

Looking at the results of all twelve instruments together, we find that students appear to change more in the first two years than in the second two years. But the changes in the second interval are more directly attributable to the student's successful participation in the college's curriculum. This finding suggests that there may, indeed, be a college atmosphere effect, as studies of college outcomes have shown. But the curriculum does have a decided, demonstrable added value.

Among the other variables that could account for change, the age of the student may be particularly

significant for educators attempting to serve the "new" student effectively. Older adults change because of the curriculum just as younger students do. A noteworthy finding here is that age does indeed seem to confer some initial advantages as reflected in




the cognitive-developmental scores of entering students, but not on the more specifically focused abilities. This suggests that educators can rely on age as an indicator of advanced ability with respect to broad cognitive patterns but not at the more specific skill level.

We have seen that changes do occur because of the curriculum. But changes of what kind?

#6. Changes included broad generic abilities

These general outcomes come to life as we examine multiple patterns of student change that emerge from our look at students' developing abilities. Combined results from the longitudinal and cross-sectional studies using McBer's Cognitive Competence Assessment Battery (Winter, McClelland & Stewart, 1981) show changes on the broad, generic ability measures of critical thinking, achievement and leadership motivation, self-definition, and personal maturity. Thus, our more conservative, variable-controlled comparisons confirmed results from a separate seven college study of student change in relation to college-promised goals in which we participated as "Clare" College (Winter, McClelland & Stewart, 1981). This supports a recent trend in higher education calling for production measures of college outcomes which ask students to generate essays or respond in simulations rather than to select from a list of alternatives.

#7. Student learning styles changed dramatically

Our student interviews independently confirmed a recent description of the learning process as experiencing, reflecting, forming new concepts, and testing one's judgment and abilities in action (Kolb, 1983). Further evidence for the Alverno student's growing awareness of learning processes are the dramatic changes appearing in students' orientations to learning styles using Kolb's measure. At entrance, both younger and older students showed marked preference for "concrete" over "abstract" thinking, and for "reflective observing" as against "active experimenting." In the first two years, they moved rapidly toward a more balanced pattern. By the second testing, they had come to rely equally on concrete and abstract modes and to show a similar flexibility in choosing either reflective or active approaches.

Additional analyses revealed that students who showed high achievement in the curriculum changed more, and that the curriculum still accounted for change where age, pretest scores, and the other variables were controlled. We find that the growth toward balance among learning modes occurs for both younger and older students. Older students appear to more easily include active experimenting than younger students, probably because their more immediate and long-term involvement in work and family concerns calls for more active trial of their ideas and plans (Mentkowski, O'Brien, Cleve & Wutzdorff, 1983).

#8. Students developed moral sophistication

The study of student perceptions indicated more sophisticated changes in valuing; this was also confirmed through faculty experience (Earley, Mentkowski & Schafer, 1980). These changes parallel similar development in moral reasoning described by Kohlberg and measured by Rest's Defining Issues Test. Students became increasingly sophisticated in their use of principled reasoning in resolving moral dilemmas. Older students showed generally higher scores than younger students at entrance to college, but both groups made gains during college, with high achievers in the curriculum showing more change than low achievers.

#9. Both older and younger students changed their ways of thinking

Perry's scheme of intellectual and ethical development is perhaps the most directly descriptive model of college students and is of primary interest here in describing non-linear change.* This scheme describes phases through which students move as they respond to the diversity and ambiguity encountered in college learning.

Some patterns emerge when we compare older and younger students. Older students have a consistent edge on younger students in decision making and career understanding at entrance. Although both groups change, older students remain more sophisticated. However, understanding classroom learning processes and roles is *not* related to age at entrance at college. Older students are starting at the same place as younger students when they enter. But, after two years, older students make more immediate progress in understanding such concepts as learning in multiple ways, learning from peers, and independent learning. Younger students do "catch up" during the last two years, when they make their leap in development. Formal learning experiences are necessary for this enhanced understanding of classroom learning processes and roles. Change for both older and younger students is due in part to performance in the curriculum.

**The 3000 essays were elicited by Knefelkamp (1974) and Widick's Measure of Intellectual Development and analyzed using the Alverno Criteria for the Perry Scheme (Mentkowski, Moeser & Strait, 1983).*

What explains these variations in growth? Patterns of change do not run in neat parallel across the 12 measures. There are increases at different intervals as well as some decreases. Our reading of the evidence suggests that development is not linear, and that both younger and older students show recycling. That is, development proceeds in a gradual upward movement, but when an individual enters a new discipline, setting, or life phase, she cycles back to earlier, less sophisticated modes and strategies of thinking. This may explain why we see an increase in decision making ability on the Perry scheme during the first two years, and a decrease after the second two years when students are generally faced with the more unfamiliar decisions that leaving college brings.

Educators cannot assume that sophisticated levels of student thinking in one area are necessarily parallel in an unfamiliar area. Thus, even experienced adults can expect benefits from formal education. These findings argue for systematic assessment across disciplines to verify ability development and improve prospects for transfer to other settings.

#10. Alumnae stressed the importance of both intellectual and interpersonal abilities at work

In analyzing the interviews of the alumnae we studied, we found two major categories of complex abilities. Both younger and older women, across all professional groups, rated reasoning abilities—using such terms as "analysis," "problem solving," "decision making," "planning," and "organizational abilities"—as important to their career performance. Alumnae also consistently emphasized interpersonal abilities learned in college as critical to effective work. One alumna said, "You are more aware of your interaction skills and how your interaction affects work relationships."

#11. . . . And so did other practicing professionals

Our studies of effective professional performance were designed to build a bridge to professionals who were not Alverno alumnae in order to validate abilities the faculty had identified. Eighty nurses from three health care settings (community, long-term care, acute care) and over 100 women managers and executives from more than 50 private corporations provided us with performance interviews, career histories, and ratings of abilities critical for selection and performance. Both studies yielded models of broad abilities that characterize effective on-the-job performance and showed a remarkable similarity to those identified by the faculty.

Intellectual and interpersonal abilities had equal importance in the ability models. Effective nurses used "coaching" to change client attitudes and behavior. In "conceptualizing," they created patterns of data, identified health problems, and gave rationales for treatment plans. Managers were equally likely to use intellectual abilities (thinking through problems, applying past experiences to interpret events, using a framework to guide analysis and actions) as they were to use interpersonal abilities (using power, developing subordinates, managing groups).

To insure effective career performance for their graduates, colleges will have to focus not only on the development of cognitive skills, but also on their integration with high level interpersonal skills.

#12. Abilities function as an organizing principle for role performance and career satisfaction

What are the consequences of organizing learning in terms of abilities? Although alumnae use abilities taught in the curriculum, they also use abilities to create a theory of action that gets tested in various work situations. This is in sharp contrast to the view that technical knowledge alone is the basis for effective performance. Alumnae do say they learn new technical skills, but they do not emphasize this knowledge when they describe how they go about deciding what to do. "My job is never the same . . . I use communication and analysis because you work very independently . . . you have to analyze the financial statements from taxpayers and determine a course of action."

Analysis of work behavior of experienced, outstanding professionals who are not Alverno alumnae shows that professionals use the abilities, and that abilities are an organizing principle for role performance. In managers' performance interviews, we found few examples of using "specialized knowledge" as a basis for performance. Managers use these skills, but when they describe what they do in certain situations, broad abilities form the basis for their actions.

Outcomes developed by colleges need to include more than the knowledge component of abilities. Abilities, which cross position levels and even careers, can be abstracted by colleges and built into general education curricula. Abilities that are profession-specific (e.g., "entrepreneurial abilities" for managers or "coaching" for nurses) become the cornerstone for further development in majors.

#13. Alumnae continue as self-sustaining learners

**Experience learning as a continuous process**

**Tie knowledge, theory and experience to productive action**

**Apply abilities in action, get a response, and adjust accordingly**

**Integrate and adapt abilities**

**Think and perform in context**

Abilities are combined in various ways according to situational demands and are adapted to fit a particular action plan. How does this new learning happen? Educators question how and why abilities are developed so they can foster them in college. As we analyzed the alumnae interviews, a picture of ability-based learning began to emerge as it was practiced at work. Several components of "learning to learn" characterized alumnae behavior.

Alumnae experience learning as a continuous process. While they are highly successful in achieving their immediate career goals, they continue to regard learning as a major value and an important part of their lives after college. The work setting makes major demands and provides opportunities for continued learning. At the same time, they describe learning as an intrinsically rewarding activity which motivates career development and job choice.

Another element of learning to learn is to tie knowledge, theory, and experience to productive action. Alumnae describe putting these elements together in new situations. In the process, they adapt and adjust, spending a great deal of time ". . . observing, thinking, retrenching; if it doesn't work, I try something else."

Central to learning to learn is thinking and performing in the context of the current setting and situation. We see a sensitivity to the discretionary use of abilities, depending on the constraints and challenges of a particular work setting. Alumnae see their actions in relation to their reading of the situation, and the consequences that are likely to occur. This is independently confirmed in the study of nurses. Of nine abilities identified, nurses in the community health setting performed significantly more varied abilities than did those in acute care and long-term care settings. Hospitals and nursing homes are generally seen as more structured and less open to allowing a nurse to perform the full range of her abilities. Context is an important factor in work performance. Abilities taught in college need to be practiced across settings.

College learning and abilities form a foundation for role performance after college, but "learning to learn" is a prerequisite to adapting abilities in the role one has. Thus, "learning to learn" is a process that promotes adaptability to multiple settings; it links ability-based learning and work after college.

#14. Alumnae experienced competence

Competence is a concept and an experience. College-learned abilities and work also are related strongly by the notion of self-perceived competence, which contributes to a high level of self-esteem. The notion of competence is an organizer for self-sustained learning both in college and at work. It is one of the most powerful experiential triggers for development according to alumnae testimony about how they manage their career changes and their ratings of career satisfaction. In sum, the act of verbally identifying and elaborating abilities and practicing them in college has a powerful impact that carries forward to later life.

**The Unfinished Agenda**

Our overall plan is to continue opening many of these issues and findings in more detail to the critique and comment of faculty in higher education, a process that will engage us and others in a renewal of interest in our chief concerns as educators.

We have been excited while learning, using, and evaluating the concept of ability-based learning. Alverno has been committed not only to designing this kind of curriculum but also to designing an intensive measurement strategy to test these ideas. The research presented here offers insights into new approaches in adult learning and development which may have consequences in settings outside of higher education. In this way, we begin to insure that we develop abilities that truly last a lifetime.

The research reported here was supported in part by a major three-year grant to the authors from the National Institute of Education (NIE-G-77 0058). We are deeply grateful to NIE for its support.

Preliminary findings of the research were first reported to NIE in 1983. Since then, the 2,000 page study has been refined and summarized for distribution. Copies of the summary, *Careering after College,* and ten research reports can be ordered from Alverno College's Office of Research and Evaluation, 3401 South 39th Street, Milwaukee, WI 53215. ■

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